

Claims

We claim:

Sub A1X

A method of isolating a telephone line, comprising:

providing modem circuitry;

5 providing system side line isolation circuitry;

integrating the modem circuitry and system side line isolation circuitry within a single integrated circuit, the single integrated circuit configured to communicate through an isolation barrier;

providing an asynchronous serial port on the single integrated circuit; and

10 configuring the single integrated circuit to transfer data of a synchronous modem transmission protocol through the asynchronous serial port.

2. The method of claim 1 wherein the synchronous modem transmission protocol is an HDLC protocol.

3. The method of claim 1 wherein the asynchronous serial port is a transmit pin of the single integrated circuit.

4. The method of claim 1 wherein the asynchronous serial port is a receive pin of the single integrated circuit.

5. The method of claim 4, further comprising providing a transmit pin of the single integrated circuit, the receive pin and the transmit pins being asynchronous serial pins, the

receive pin configured to receive modem information into the single integrated circuit from an external interface and the transmit pin configured to transmit modem information from the single integrated circuit to the external interface.

5 ~~6~~ A method of transferring information between a modem circuit and an external interface, comprising:

providing data of a synchronous modem transmission protocol to an asynchronous serial pin; and

transferring the data of the synchronous modem transmission protocol through the asynchronous serial pin in an asynchronous manner.

10 7. The method of claim 6, the modem circuit be formed within a system side line isolation circuit.

8. The method of claim 7, the system side line isolation circuit configured to transfer data across an isolation barrier.

9. The method of claim 6, wherein the transferring comprises transmitting data from the modem circuitry to the interface.

20 10. The method of claim 9, further comprising the modem circuitry indicating synchronous modem transmission protocol information.

11. The method of claim 10, the synchronous modem transmission protocol information indicating an end of frame event.

12. The method of claim 11, further comprising providing a frame result word at the serial
5 pin.

13. The method of claim 10, the synchronous modem transmission protocol information provided at an output pin separate from the serial pin.

10 14. The method of claim 13, the synchronous modem transmission protocol information being an end of frame signal.

15. The method of claim 10, the synchronous modem transmission protocol information being provided through the serial pin.

16. The method of claim 15, the synchronous modem transmission protocol information being contained in at least one control bit of a word provided at the serial pin.

17. The method of claim 16, the synchronous modem transmission protocol information
20 indicating an end of frame event.

18. The method of claim 6, wherein the transferring comprises transmitting data from the interface to the modem circuitry.

19. The method of claim 18, further comprising the modem circuitry indicating synchronous
5 modem transmission protocol information.

20. The method of claim 19, the synchronous modem transmission protocol information provided at an output pin separate from the serial pin.

21. The method of claim 10, the synchronous modem transmission protocol information being a signal indicating that the modem is available to accept additional data.

22. The method of claim 21, the signal being a clear to send signal.

~~23.~~ A method of transferring data between modem circuitry and an interface, the method comprising:

providing the modem circuitry within an integrated modem and system side line isolation circuit;

providing the integrated modem and system side line isolation circuit with an
20 asynchronous serial pin

providing data of a synchronous modem transmission protocol to the asynchronous serial pin; and

transferring the data of the synchronous modem transmission protocol through the asynchronous serial pin.

24. The method of claim 23, the system side line isolation circuit configured to transfer data across an isolation barrier.

25. The method of claim 23, the synchronous modem transmission protocol being a framed HDLC protocol.

26. The method of claim 23, further comprising:
providing information on a first control pin separate from the serial pin when the modem is ready to accept addition data from the interface; and
providing information either on a second control pin separate from the serial pin or on the serial pin indicating when an end of frame has occurred.

27. The method of claim 26, further comprising providing a frame result word at the serial pin.

28. The method of claim 26, the information indicating when an end of frame has occurred being contained in at least one control bit of a word provided at the serial pin.

29. The method of claim 26, the information indicating when an end of frame has occurred being provided on a second control pin separate from the serial pin.

30. Circuitry for transferring data of a synchronous modem transmission protocol,
comprising:

an integrated modem and line-isolation circuit;

an asynchronous serial pin, the asynchronous serial pin being an input or output pin of the integrated modem and line-isolation circuit; and

means to enable transfer of data of the synchronous modem transmission protocol through the asynchronous serial pin.

31. The circuitry of claim 30 wherein the means comprises a control pin providing synchronous modem transmission protocol information.

32. The circuitry of claim 31, the synchronous modem transmission protocol information being end of frame information.

33. The circuitry of claim 31, the synchronous modem transmission protocol information being clear to send information.

34. The circuitry of claim 30 wherein the means comprises providing synchronous modem transmission protocol information at least one bit of words transferred through the asynchronous serial pin.

35. The circuitry of claim 34, the synchronous modem transmission protocol information being end of frame information.

36. The circuitry of claim 30, the synchronous modem transmission protocol being an HDLC framing protocol.

37. An integrated line isolation circuit, comprising:
modem circuitry and system side line isolation circuitry integrated within the line isolation circuit; and
an asynchronous serial interface pin coupled to the modem circuitry and the system side line isolation circuitry, the integrated line isolation circuit configured to transfer data of a synchronous modem transmission protocol through the asynchronous serial interface pin.

38. The circuit of claim 37, the line isolation circuit configured to transfer data across an isolation barrier.

39. The circuit of claim 37, the synchronous modem transmission protocol being a framed HDLC protocol.

40. The circuit of claim 37, further comprising:

5 a first control pin separate from the serial pin, information presented on the first control pin indicating when the modem is ready to accept addition data from the interface;
and
wherein information indicating when an end of frame has occurred is either indicated at a
second control pin separate from the serial pin or indicated within information
10 presented on the serial pin.

41. The circuit of claim 40 further comprising a second control pin separate from the serial pin, information indicating when an end of frame has occurred being presented on the second control pin.

42. The circuit of claim 37, further comprising a control pin separate from the serial pin, information presented on the first control pin indicating a synchronous modem transmission protocol event

20 43. The circuit of claim 42, the synchronous modem transmission protocol event indicating an end of frame.

44. The circuit of claim 42, the synchronous modem transmission protocol event indicating when the modem is ready to accept addition data from the interface.

45 The circuit of claim 37, further comprising at least one control bit within words presented
5 on the serial pin, the at least one control bit indicating a synchronous modem transmission protocol event.

46. The circuit of claim 45, the synchronous modem transmission protocol event indicating
an end of frame.

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